WE CLAIM:

1. A single chain multimeric interferon β polypeptide comprising at least two monomers linked via a peptide bond or a peptide linker, wherein at least one of said monomers is an interferon β monomer comprising an amino acid sequence that differs from that of wildtype human interferon β in at least one introduced glycosylation site.

2. The multimeric polypeptide of claim 1, comprising two or more monomers with the same amino acid sequence.

3. The multimeric polypeptide of claim 1 comprising two interferon β monomers.

4. The multimeric polypeptide of claim 1 wherein said monomers independently comprises one or two introduced glycosylation site(s).

5. The multimeric polypeptide of claim 1 wherein at least one of the monomers is wildtype human interferon β, optionally C-terminally or N-terminally truncated.

6. The multimeric polypeptide of claim 1 wherein at least one of said monomers comprises the introduced glycosylation site Q49N+Q51T.

7. The multimeric polypeptide of claim 1 wherein at least one of said monomers comprises the introduced glycosylation site F111N+R113T.

8. The multimeric polypeptide of claim 1 wherein at least one of said monomers comprises a mutation independently selected from C17S, D110F, K19R, K33R, or K45R.

9. The multimeric polypeptide of claim 1 wherein the monomers are linked via a peptide linker.

10. The multimeric polypeptide of claim 9 wherein the peptide linker has from 5 to 30 amino acid residues.

11. The multimeric polypeptide of claim 9 wherein said linker comprises one or more glycosylation site(s).

12. The multimeric polypeptide of claim 9 wherein said linker comprises a lysine or cysteine as an attachment group.

13. A conjugate of a single chain multimeric interferon beta polypeptide, comprising:

(a) a multimeric polypeptide comprising at least two monomers linked via a peptide bond or a peptide linker, wherein at least one of said monomers is an interferon beta monomer comprising an amino acid sequence that differs from that of wildtype human interferon beta in at least one introduced glycosylation site, and

(b) at least one first non-polypeptide moiety covalently attached to the multimeric polypeptide.

14. A conjugate of the multimeric polypeptide of claim 1 comprising at least one first non-polypeptide moiety covalently attached to the multimeric polypeptide.

15. The conjugate of claim 13 or 14, wherein the first non-polypeptide moiety is a sugar moiety.

16. The conjugate of claim 13 or 14, wherein the first non-polypeptide moiety is a polymer molecule.

17. The conjugate of claim 16, wherein the polymer molecule is a linear or branched polyethylene glycol.

18. The conjugate of claim 16, wherein the polymer molecule has lysine or cysteine as an attachment group.

19. The conjugate of claim 13 or 14, further comprising at least one second non-polypeptide moiety.

20. The conjugate of claim 19, wherein the first non-polypeptide moiety is a polymer molecule and the second non-polypeptide moiety is a sugar moiety, or the first non-polypeptide moiety is a sugar moiety and the second non-polypeptide moiety is a polymer molecule.

21. The multimeric polypeptide conjugate of claim 13 or 14 comprising at least one improved property as compared to Avonex, Rebif or Betaseron, said property selected from the group

consisting of reduced immunogenicity, increased functional *in vivo* half-life, and increased serum half-life.

22. A nucleotide sequence encoding a multimeric polypeptide of claim 1 or 13.

23. An expression vector comprising the nucleotide sequence of claim 22.

24. A host cell comprising a nucleotide sequence of claim 22 or an expression vector of claim 23.

25. The host cell of claim 24, which is a CHO, BHK, HEK293, or SF9 cell.

26. A method for preparing the conjugate of claim 13 or 14, wherein the multimeric polypeptide is reacted with a polymer molecule under conditions conducive for conjugation to the multimeric polypeptide to take place, and the conjugate is recovered.

27. A pharmaceutical composition comprising a multimeric polypeptide of claim 1 or the conjugate of claim 13 or 14 and a pharmaceutically acceptable diluent or carrier.

28. The composition of claim 27 for the treatment of viral infections, cancers, tumors, or tumour angiogenesis, Chrohn's disease, ulcerative colitis, Guillain-Barré syndrome, glioma, idiopathic pulmonary fibrosis, abnormal cell growth, or for immunomodulation in a suitable animal.

29. The composition of claim 28 for the treatment of multiple sclerosis, hepatitis, or a herpes infection.

30. A method of treating a mammal with a viral infection, cancers, tumors, or tumour angiogenesis, Chrohn's disease, ulcerative colitis, Guillain-Barré syndrome, glioma, idiopathic pulmonary fibrosis, abnormal cell growth, which method comprises administering an effective amount of the composition of claim 27.

31. A method of treating a mammal with benign multiple sclerosis, relapsing remitting multiple sclerosis, primary progressive multiple sclerosis, secondary progressive multiple sclerosis, monosymptomatic multiple sclerosis, hepatitis, or a herpes infection, which method comprises administering an effective amount of the composition of claim 27.

32. A method of treating a mammal with a viral infection, cancers, tumors, or tumour angiogenesis, Chrohn's disease, ulcerative colitis, Guillain-Barré syndrome, glioma, idiopathic pulmonary fibrosis, abnormal cell growth, benign multiple sclerosis, relapsing remitting multiple sclerosis, primary progressive multiple sclerosis, secondary progressive multiple sclerosis, monosymptomatic multiple sclerosis, hepatitis, or a herpes infection, said mammal having circulating antibodies against interferon β 1a and/or 1b, which method comprises administering an effective amount of the composition of claim 27.